U.S. Air Force Western Regional Environmental Office
Air Quality Program Roundtable

Proposed Airborne Toxic Control Measures to Reduce Diesel Particulate Matter Emissions from In-Use and New Stationary Diesel-Fueled Engines

November 21, 2002

California Environmental Protection Agency

Air Resources Board

Stationary Diesel-Fueled Engine Impacts

- **Statewide Emissions**
  - 16,000 stationary diesel fueled engines (11,000 emergency standby / 5,000 prime)
  - 1.5 tons of diesel PM emitted per day
- **Near Source Risk**
  - Typical emission rate of in-use engine (0.5-0.6 g/bhp-hr)
  - Typical horsepower ranges from 400-600 hp
  - Near source risk can be high

Potential Near Source Risk

- **Diesel Exhaust PM Risk**
  Potential Cancer Cases in a Million for a 550 hp Engine

PRELIMINARY DRAFT - DO NOT CITE OR QUOTE

EF =0.55 g/bhp-hr

Downwind Distance (m)

Hours	30	50	69	100	200	300	400	500	800	1600	3200
10											
20											
30				LESS THAN 10/MILLION							
40											
50											
100											
150											
200		10 TO 100 MILLION									
300											
400											
500		GREATER THAN									~1
1000		100/MILLION									

ATCM Development Process

- **Held Public Workshops**
  - February 2001 - Discussed Risk Reduction Plan
  - January 2002 - Presented regulatory concepts
  - April 2002 - Presented proposed draft regulatory language
  - September 2002 - Presented proposed modifications to the draft regulatory language
  - November 2002 - Presented proposed modifications to the draft regulatory language
- **Coordination with CAPCOA Working Group**
- **Ongoing consideration of verbal and written comments on regulatory concepts and draft regulatory language**

ATCM Development Process (continued)

- Control Equipment Demonstration Program
  - CEC and ARB PM Control Technology Demonstration
    - 7 retrofit control technologies: passive and active DPFs, DOCs, emulsified fuel
    - Caterpillar, Cummins, and DDC engines
    - 2 size ranges
    - Test method comparison
- Emission Inventory Improvement
- Emergency Standby Engine Survey

Basic Control Approach to Developing Air Toxic Measures (ATCMs)

- Establish diesel PM emission standards that are based on the use of best available diesel PM control technologies and lowest-emitting diesel-fueled engines
- Consider contribution to overall ambient PM and risk levels, potential near source risk, and the cost of controls when establishing emission standards

Key Elements of the November 2002 Proposed ATCMs

- Applicability of Emission Standards
- Definitions
- Exemptions
- PM Emission Standards
- Fuel Requirements
- Initial Recording Requirements
- Initial Demonstration of Compliance
- Compliance Schedule
- PM Emission Testing

Applicability of Emission Standards

- **In-Use Stationary Diesel ATCM**
  - Applies to any person who owns or operates a stationary prime or emergency standby diesel engine greater than 50 hp
- **New ATCM**
  - Applies to any person who sells, leases, purchases, owns, or operates a new stationary prime or emergency standby diesel engine greater than 50 hp
  - Applies to any person who sells a new stationary prime or emergency standby diesel engine less than or equal to 50 hp
- **ATCMs do not apply to Agricultural Engines**

Definitions

- **Emergency Standby Engine**
  - **A stationary CI engine used for emergency use (power, water pumping, etc.)**
- **New Engine**
  - **Installed, relocated, reconstructed after the effective date of the New Engine ATCM**
  - **Exact replacement installed on a temporary basis for maintenance of existing engine is <u>not</u> considered new.**

Exemptions

- **Both New and In-Use ATCMs**
  - Agricultural engines
  - “True Fidelity” military engines
- **In-Use ATCM, only**
  - In compliance with *Guidance*
  - San Clemente and San Nicholas Islands
  - Delay in compliance until 2010 for engines located 2 miles from receptor and operating less than 500 hours/year
  - Engines to be replaced per approved OSHPD plan by 2009
  - Engines on OCS platforms
  - Engines at nuclear power plants used for safe shutdown
  - Turbine “pony” engines

Proposed Emission Standards for New Stationary Diesel ATCM

- **PM Limit:** 0.15 g/bhp-hr for E/S
  0.01 g/bhp-hr for Prime
  Off-road limit ≤ 50 hp

- **NOx, HC, CO Limit:** Applicable off-road limits for model year

Proposed Emission Standards for In- Use Stationary Diesel Engines

- **Prime Engines**
  - **PM Limit:**
    - **0.01 g/bhp-hr,**
    - **85% reduction from baseline, or**
    - **Replace with New Engine**
    -
- **Prime and E/S Engines**
  - **NOx, HC, CO Limit:**
    - **No increase > 10% from baseline**

Proposed Tiered Approach for PM Emission Standards for In-Use E/S Engines

- **E/S engines would be required to meet a tiered schedule:**

DIESEL PM EMISSION RATE (g/bhp-hr)	MAXIMUM ALLOWABLE ANNUAL HOURS OF OPERATION (Maintenance and Testing)
>0.50	15
0.50	30
0.40	40
0.15	100
0.01	>100

Proposed E/S Engines Operating Requirements

- Unlimited hours for emergency use
- Unlimited hours for emission testing to show compliance
- In accordance with proposed limits for maintenance & testing
- Up to 30 minutes prior to rolling blackout if approved Rolling Blackout Operation Plan
- May not be operated to fulfill interruptible load contract

Proposed Fuel Requirements

- Owners opting to use diesel fuel in meeting the emission requirements must use “vehicular diesel fuel”
  - CARB diesel
  - Low-sulfur CARB diesel fuel
- Owners opting to use fuel other than diesel fuel are limited to ARB verified alternative diesel fuels and additives or an alternative fuel (i.e. CNG, LNG)

Initial Recordkeeping Requirements

- **In-Use and New Stationary Diesel ATCM**
  - Requires information be submitted to district 6 months after effective date
  - Applies to any person who owns or operates a stationary prime or emergency standby CI engine greater than 50 hp
- **New Stationary Diesel ATCM Dealer Notification Requirement**
  - Applies to dealers selling ≤ 50 hp stationary prime or emergency standby CI engines

Monitoring Requirements

- **In-Use and New Stationary Diesel ATCM**
  - **Hour meters for E/S engines**
  - **Backpressure monitor if DPF installed**
  - **Other**

Initial Demonstration of Compliance

- The owner or operator is required to provide District with emissions data to show compliance, such as:
  - emission test data on engine
  - emission test data on similar engine
  - off road certification data
  - verification data
  - manufacturers data

Compliance Schedule

- **In-Use ATCM**
  - **Pre-1989: July 1, 2005**
  - **1990 thru 1995: July 1, 2006**
  - **Post 1995: July 1, 2007**
  - **Compliance Plan Option for owners of four or more engines**
- **New ATCM**
  - **120 days after effective date of ATCM (~early to mid 2004)**

PM Emission Testing

- ATCMs propose:
  - ARB Method 5 and 100, carried out under steady state operation in accordance with ISO 8178 loading cycles
  - Alternative method approved by the District
- Test method evaluation underway
  - Method 5/100
  - Off-road Certification Method (ISO 8178)
  - Industry/ARB/District Workgroup established to evaluate and propose appropriate test method

Next Steps

- Continue informal regulatory process
- Next Workshop tentatively scheduled for February
- Tentative Board consideration July 2003

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